

## CLAIMS

## 1. A smoking behaviour analyser comprising:

smoking article mounting means, by which a smoking article can be mounted at a mouth end thereof, the mounting means comprising a mouthpiece which, when holding a smoking article, is in fluid-flow communication with the mouth end of the smoking article;

fluid flow pressure drop detection means and smoke density detection means;

signal conversion means operable to convert signals obtained from the fluid flow pressure drop detection means and smoke density detection means into data;

data processing means operable to process data, the data processing means comprising a processor operable to process a calculation of a delivery value of particulate phase smoke components from a smoking article when mounted by the mounting means and being smoked via the mouthpiece;

and display means operable to display processed data in graphical and/or numerical form.

2. A smoking behaviour analyser according to Claim 1, wherein said fluid flow pressure drop detection means comprises two openings in the mounting means, one opening each being located at either side of an orifice plate, and the openings being connected to pressure sensors.

3. A smoking behaviour analyser according to Claim 2, wherein said pressure sensors are pressure transducers.

4. A smoking behaviour analyser according to Claim 2 or 3, wherein said pressure sensors are located in data acquisition means or data processing means.

5. A smoking behaviour analyser according to Claim 2 or 3, wherein said pressure sensors are located in the mounting means.

6. A smoking behaviour analyser according to any one of Claims 2-5, wherein said pressure transducers are SenSym SCX 01DM or the like.

7. A smoking behaviour analyser according to any one of the preceding claims, wherein said fluid flow pressure drop detection means is operable to take two pressure measurements; one being the difference in pressure between atmospheric pressure and that within the holder, and the other being the pressure difference between either side of the orifice plate, this pressure difference being proportional to the flow through the orifice.

8. A smoking behaviour analyser according to any one of the preceding claims, wherein said smoke density detection means comprises a light emitter and a light receiver.

9. A smoking behaviour analyser according to Claim 8, wherein said light emitter is a device which emits light at visible or other wavelengths.
10. A smoking behaviour analyser according to Claim 9, wherein said light emitter is a light emitting diode (LED).
11. A smoking behaviour analyser according to Claim 9 or 10, wherein said light detector is a device selected for optimum performance at the wavelength of the emitted light.
12. A smoking behaviour analyser according to Claim 11, wherein said light detector is a photodiode.
13. A smoking behaviour analyser according to any one of Claims 8-12, wherein said light emitter and said light receiver are located opposite to one another within the mounting means.
14. A smoking behaviour analyser according to Claim 13, wherein the distance between said emitter and said receiver is between 2-6mm.
15. A smoking behaviour analyser according to Claim 14, wherein the distance is about 4mm.
16. A smoking behaviour analyser according to any of the preceding claims, wherein said smoke analyser is portable.
17. A smoking behaviour analyser according to any one of the preceding claims, wherein said signal conversion means is located distant the mounting means.
18. A smoking behaviour analyser according to Claim 17, wherein said signal conversion means is located in unit with data processing means.
19. A smoking behaviour analyser according to any one of the preceding claims, wherein said signal conversion means is located separately from data processing means.
20. A smoking behaviour analyser according to any one of the preceding claims, wherein said data processing means additionally comprises data acquisition means.
21. A smoking behaviour analyser according to Claim 20, wherein said signal conversion means is located in said data acquisition means.
22. A smoking behaviour analyser according to any one of the preceding claims, wherein said data processing means and said data display means are located in unit with one another.
23. A smoking behaviour analyser according to any one of Claims 1-18 or 20-22, wherein signal conversion and data processing occur in unit with the mounting means.
24. A smoking behaviour analyser according to any one of the preceding claims, wherein storage means is provided in unit with the mounting means or alternatively located separately therefrom.

25. A smoking behaviour analyser according to any one of the preceding claims, wherein said data processing means is a computer, with a processor, the computer being loaded with a suitable program.
26. A smoking behaviour analyser according to any one of the preceding claims, wherein said data processing means communicates bi-directionally with the source of data, which may be either the mounting means, signal conversion means or the data acquisition device, and carries out the necessary calculations to determine the required smoking behaviour information and smoke deliveries.
27. A smoking behaviour analyser according to Claim 25 or 26, wherein said data processing means is a laptop computer.
28. A smoking behaviour analyser according to any one of Claims 25-27, wherein said data processing means also comprises said display means.
29. A smoking behaviour analyser according to any one of the preceding claims, wherein said display means displays real-time information about each puff.
30. A smoking behaviour analyser according to Claim 29, wherein the puff information displayed includes one or more of puff volume, puff shape, puff duration, smoke concentration, smoke mass per unit time, optical density, mean pressure drop, effort and time period.
31. A smoking behaviour analyser according to any one of the preceding claims, wherein the display of one or more of this data is in graphical form individually for each puff taken by the smoker.
32. A smoking behaviour analyser according to any one of the preceding claims, wherein the puffing profile and associated data is retained by the processing means for further examination.
33. A smoking behaviour analyser according to any one of the preceding claims, wherein said processing means is programmed to reset before acquisition of data between every smoke and zeroes the fluid pressure drop detection means and smoke density detection means.
34. A smoking behaviour analyser according to any one of the preceding claims, wherein the signals derived from the fluid-pressure drop detection means and smoke density detection means are transferred to the data processing device in a conductorless fashion.
35. A smoking behaviour analyser according to Claim 34, wherein signal transfer is by electromagnetic wave means.
36. A smoking behaviour analyser according to any one of the preceding claims, wherein the signals derived from the fluid-pressure drop detection means and smoke density detection means are transferred to the data processing device transfer by using electrical leads for the optical signals and flexible tubing for the pressure measurements.

37. A smoking behaviour analyser substantially as hereinabove described with reference to Figures 1, 2 or 3 of the drawings hereof.

38. A smoking behaviour analyser according to Claim 1, wherein measurement, conversion and transmission of data at the mounting means, separate from processing thereof at a remote location does not occur, unless there is additionally processing of the converted data at the mounting means prior to transmission to display means.